of the stratigraphy of the United Kingdom; outlines of the classification of organized beings, existing and extinct; the commoner rocks and rock-forming minerals, and the commonest and most characteristic British fossils. Candidates must send in their names, on or before October 12, 1891, to Miss A. Johnson, Llandaff House, Cambridge, from whom further information may be obtained.

SCIENTIFIC SERIALS.

American Journal of Science, October 1890.—A description of the "Bernardston Series" of metamorphic Upper Devonian rocks, by Prof. Ben. K. Emerson. With respect to this paper, Prof. J. D. Dana remarks:—"Prof. Emerson has given the region a thorough investigation, in which he has removed the doubts as to the relations of the beds, made out, as far as possible, the system of faults and flexures, studied the rocks as to their kinds and transitions, and determined the age of the series to be Upper Devonian. The paper will be accepted in America, and should be elsewhere, as putting the facts beyond doubt that gneiss, diorite, granite, and the other crystalline rocks described are not always of Archæan or pre-Cambrian make; that granite and diorite are not always of igneous origin; and these conclusions are made sure on the well-established criterion of age, that is, fossils—Crinoids, Corals, Brachiopods."—On the circular polarization of certain tartrate solutions, by J. H. Long. The author describes certain peculiarities of solutions of potassium antimony tartrate, when mixed with potassium or sodium carbonate, acetate, or phosphate in amounts insufficient to produce immediate precipitation. A decrease of specific rotation took place in the case of each of the mixtures. It is probable, therefore, that a temporarily stable antimony salt is formed with a corresponding amount of alkali tartrate. The observed rotation is due to this in conjunction with that of the potassium antimony tartrate which remained unchanged.—A rapid method for the detection of iodine, bromine, and chlorine, in presence of one another, by F. A. Gooch and F. T. Brooks.—Metacinnabarite from New Almaden, California, by W. H. Melville.—On the Keokuk Beds at Keokuk, Iowa, by C. H. Gordon.—Note on the vapour-tension of sulphuric acid, with the description of an accurate cathetometer microscope, by Dr. Chas. A. Perkins. The author finds that the vapour-tension is not greater than about 0·01 mm. at ordinary temperatures.—Experiments upon the constitution of the natural silicates, by F. W. Clarke and E. A. Schneider.—On five new American meteorites, by George F. Kunz. Descriptions and analyses are given of the group of meteorites recently discovered in Brenham Township, Kiowa County, Kansas; the Winnebago County, Iowa, meteorite; the meteoric stone from Ferguson, Haywood County, North Carolina; the meteoric iron from Bridgewater, Burke County, North Carolina; and the meteoric iron from Summit, Blount County, Alabama.—On the determination of the coefficient of cubical expansion of a solid from the observation of the temperature at which water, in a vessel made of thin solid, has the same apparent volume as it has at 0° C.; and on the coefficient of cubical expansion of a substance determined by means of a hydrometer made of this substance, by Alfred M. Mayer.

The *American Meteorological Journal* for October contains articles:—On cyclical periodicity in meteorological phenomena, by E. D. Archibald, in which he advocates investigations as to the possible connection between weather and other physical agencies, on the following plan: (1) the collection and analysis of all previous investigations which bear traces of any value, and their distribution under the head of the particular element dealt with; (2) the arrangement of the periods in the matter of length; (3) the choice of the particular working hypothesis intended to be employed, and the working out of its supposed effects in different parts of the world; (4) the reduction and comparison of the data representing the various elements, and their comparison with the deductions from the hypothesis; (5) the investigation of the causes of apparent exceptions, and the exhibition of the final results, both in tabular and graphic form.—On accessory phenomena of cyclones, by H. Faye. The author draws attention to the theories of Redfield and Reid, and to the contradictory theories of Espy and Bache, from which he argues that only one conclusion could be drawn, viz. that there were two entirely different kinds of storms and tornadoes; and he refers to the advance made by the study of synoptic charts, both as regards the movements of cyclones and thunderstorms. The article contains an illustration of what he assumes to be a typical figure of a cyclone.—On temperatures in and near forests, by Prof. M. W. Harrington. The author shows that this subject admits of a much less satisfactory solution than that of soil temperatures discussed in an earlier paper. The observations used are from several sources over Central Europe, and refer in this part of the discussion to differences of temperature extremes. They show that the forest cuts off the mean daily maxima on the yearly average to the extent of 2° or 3°; the effect is most marked in summer and least in winter. The action of the forest on the minima of temperature is also a moderating one: the temperature does not on the average fall as low in forests as outside. With long-continued unchanging weather the peculiarities of forest climate tend to disappear.—On the Meteorological Section of the French Association for the Advancement of Science, held at Limoges in August last, by A. L. Rotch. The attendance of meteorologists was not large, but some important matters were discussed, among which may be mentioned the use of self-recording instruments on mountain stations, the subject being introduced by M. Teisserenc de Bort, and a paper on the recent seismic activity of Japan, by M. Y. Wada, of Tokio.

In the *Journal of Botany* for October is a very interesting biographical sketch, accompanied by an excellent portrait, of the late Mr. John Ralfs, of Penzance, whose classical work, "The British Desmidieæ," one of the most valuable monographs ever published, was brought out as long ago as 1848. The value of this work may be judged from the fact that before its publication the number of species of Desmids recorded as British was four. An interesting note is given on the fertilization of the sugar-cane, by Dr. Fressanges, President of the Medical Society of Mauritius.

The greater part of the number of the *Nuovo Giornale Botanico Italiano* for October is occupied by the completion of Signor L. Nicotra's interesting and important paper on the flora of Sicily. Going through the natural orders successively, he describes in general terms the representation of the order in the flora of the island, and points out the contrast between the flora of its north-eastern and that of its south-western portion, due to geological causes, the former having more of a European, the latter more of a North African character. Some particulars are added with regard to the flora of the small islands adjacent to Sicily. The remaining articles in the number are of special interest to Italian botanists.

SOCIETIES AND ACADEMIES.

Paris.

Academy of Sciences, October 20.—M. Duchartre in the chair.—Study of the movement of a double cone which appears to rise, though it really descends, on an inclined plane, by M. H. Resal. A double cone placed on two guides inclined to the horizon, and nearer to one another at the lower than at the upper end, appears to ascend. The author has studied the mechanics of this movement.—Note on lightning-flashes which meet one another, by M. A. Trécul. On September 29, M. Trouvelot presented a paper on the identity in the structure of lightning and discharges from an induction machine. The author calls attention to the fact that he made similar observations ten years ago.—Observations of Brookes's comet (March 19, 1890), made with the great equatorial of Bordeaux Observatory, by MM. G. Rayet, L. Picart, and Courty. Seventy-one observations for position are given, extending from June 21 to October 12.—Remarks relative to a cause of variation of latitudes, by M. R. Radau. The movements of the sea, as well as certain meteorological phenomena (avalanches, &c.), may give rise to small deviations of the axis of our globe. It is shown that a mass of water 2000 cubic kilometres in size could produce an effect large enough to be observed.—On the established variations in the observations of the latitude of the same place, by M. A. Gaillot. Observations made at Berlin, Potsdam, and Prague, indicate that the latitude of a place is subject to a periodic variation, the maximum occurring in the summer, and the minimum in the winter, the amplitude of the oscillation about the mean value being ± 0″·25. M. Gaillot gives two hypotheses to account for this variation, and points out the means of testing each of them.

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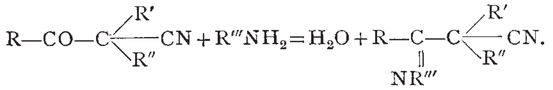
They are: (1) the axis of rotation is changed in the interior of the earth, the poles describing a circumference about the mean position, of which the radius is $0''\cdot25$ (7 or 8 metres); (2) the accepted periodic variation in observations of latitude is due to refraction phenomena.—Organization of spectroscopic researches with the great telescope of Paris Observatory, by M. Deslandres. (See Our Astronomical Column.)—Two solar prominences observed at the Haynald Observatory, Kalocsa (Hungary), by M. Jules Fényi. On August 15, at 9h. 39m., Paris mean time, a prominence reaching a height of $323''$, was observed on the western edge of the sun. Its base extended from $+37^\circ 4'$ to $+44^\circ 58'$ heliographic latitude. Another prominence was seen on August 18, at 11h. 45m., between $-41^\circ 29'$ and -55°. This attained a height of $418''$, but was of a much more broken character than the preceding one.—On certain kinds of surfaces, by M. Lelieuvre.—Researches on the atomic weight of fluorine, by M. Henri Moissan. (See Notes, p. 649.)—Action of aromatic amines and of phenylhydrazine upon the β-ketonic nitriles, by M. L. Bouveault. The author establishes the generality of the reaction—



$$\mathrm{R{-}CO{-}C}\begin{matrix}\diagup \mathrm{R'}\\ \text{———}\\ \diagdown \mathrm{R''}\end{matrix}\mathrm{CN} + \mathrm{R'''NH_2} = \mathrm{H_2O} + \mathrm{R{-}}\underset{\underset{\mathrm{NR'''}}{\|}}{\mathrm{C}}\mathrm{{-}C}\begin{matrix}\diagup \mathrm{R'}\\ \text{———}\\ \diagdown \mathrm{R''}\end{matrix}\mathrm{CN}.$$

—On the mode of combination of sulphuric acid in plastered wines, and on a method of analysis permitting the distinction between the amount of the plastering and the acidification of the wine by sulphuric acid, by MM. L. Roos and E. Thomas. It is shown, by experimental means, that the sulphuric acid introduced by the plastering exists in the wine as K_2SO_4, and not as $KHSO_4$; hence, on precipitation of the H_2SO_4 by $BaCl_2$, the whole of the HCl will remain in combination, thus:—$K_2SO_4 + BaCl_2 = BaSO_4 + 2KCl$; and so the titrations of Cl by standard $AgNO_3$, taken (*a*) in filtrate from the $BaSO_4$ made up to a definite volume, and (*b*) in a fraction of the same filtrate evaporated to dryness, and then made up to the same fraction of the definite volume, should be exactly the same if no free H_2SO_4 be present; if free H_2SO_4 be present, a corresponding quantity of HCl will be lost to titration (*b*).—The saccharine matters in mushrooms, by M. Em. Bourquelot.—On the excretory apparatus of *Palinurus vulgaris*, *Gebia deltura*, and *Crangon vulgaris*, by M. Paul Marchal.—On the primitive conformation of the kidney of Pelecypodæ, by M. Paul Pelseneer.

STOCKHOLM.

Royal Academy of Sciences, October 8.—On the spectrum of absorption of bromium, by Prof. Hasselberg.—On the development of the Orthagoriscæ, by Prof. Smitt.—A report on entomological researches in the south of Sweden and Denmark, by Prof. Aurivillius.—Microscopical structures represented in coloured figures, which had been photographed by the firm Lumière, at Lyons, exhibited by Prof. Gyldén.—On the properties of a combination between nitrogen and hydrogen (HN_3) (discovered by Prof. Curtius, in Kiel), which in its free state, as well as in its combinations, has a most remarkable analogy with the hydrogen combinations of the haloids, and in consequence thereof has been named hydrazoic acid, reported upon by Prof. Nilson.—Studies of the crystal form of the arsenopyrite, by Dr. Weibutt.—Studies of naphthalene derivatives, by Dr. Paul Hellström.—Some observations on the anatomy of the subterranean elongations of the Gramineæ, by the same.—On the occurrence of *Dictyophyllum Nilssoni*, Brongn., in the coal-bearing strata of China, by Prof. Nathorst.—On Ribaucour's cyclic system, by Prof. Bäcklund.—Derivatives of ethyliden-disulphon-acids 1, and on 1, 4 fluor-naphthalin-sulphon-acid, by Herr Mauzelius.—Contributions to the knowledge of the moss flora of Canada, by Lector N. C. Kinberg.—Contributions to the theory of infinite determinants, by Herr H. von Kock.—On the conductibility of electricity through hot, saline vapours, by Dr. S. Arrhenius.

DIARY OF SOCIETIES.

LONDON.

SUNDAY, NOVEMBER 2.

SUNDAY LECTURE SOCIETY, at 4.—The Order of Nature—its Relation to Human Life and Happiness: A. Elley Finch.

MONDAY, NOVEMBER 3.

ROYAL INSTITUTION, at 5.—General Monthly Meeting.

TUESDAY, NOVEMBER 4.

ZOOLOGICAL SOCIETY, at 8.30.—On the Indian Gaur and its Allies: W. T. Blanford, F.R.S.—Description of a New Squirrel from the Philippine Islands: Dr. A. B. Meyer.—On a Cervine Jaw from Algeria: R. Lydekker.—Note on the Skull of the East African Reed-buck (*Cervicapra bohor*): Dr. A. Günther, F.R.S.

WEDNESDAY, NOVEMBER 5.

ENTOMOLOGICAL SOCIETY, at 7.—African Micro-Lepidoptera: Right Hon. Lord Walsingham, F.R.S.—A Monograph of British Braconidæ, Part IV.: Rev. T. A. Marshall.—New Species of Moths from Southern India: Colonel Charles Swinhoe.

THURSDAY, NOVEMBER 6.

LINNEAN SOCIETY, at 8.—A Contribution to the Study of the Relative Effects of different parts of the Solar Spectrum on the Assimilation of Plants: Rev. Prof. Henslow.

CHEMICAL SOCIETY, at 8.—The Magnetic Rotation of Saline Solutions: Dr. W. H. Perkin.—Note on Normal and Iso-propylparatoluidine: E. Hori and H. F. Mosley.—The Action of Ammonia and Methylamine on the Oxylepideus: Dr. F. Klingemann and Dr. W. F. Laycock.—Condensation of Acetone Phenanthraquinone: G. H. Wadsworth.

FRIDAY, NOVEMBER 7.

GEOLOGISTS' ASSOCIATION, at 8.—*Conversazione.*

SATURDAY, NOVEMBER 8.

ROYAL BOTANIC SOCIETY, at 3.45.

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